

ABSTRACT

[0042] A data recording head having at least two waveguides that are energy-coupled. The first waveguide is end fire coupled to a radiant energy source of a first spot size, and the second waveguide outputs radiant energy of a second spot size onto a recording medium. The width of the first waveguide is larger than the width of the second waveguide, or the first spot size is larger than the second spot size. The recording also includes a cladding layer and/or a diffraction grating for mode index matching between the first and second waveguides. The second waveguide includes a solid immersion optical element to focus the output radiant energy. In one embodiment, the data recording head includes a write element to effect magnetic data recording, and the first and second waveguides are configured relative to the write element and supported relative to the recording medium to effect heat assisted magnetic recording.